



INTEGRATED RESOURCE PLAN

2020

LOCKHART POWER COMPANY

INTEGRATED RESOURCE PLAN

1. STATEMENT OF OBJECTIVE

Lockhart Power Company's (LPC) objective in developing an Integrated Resource Plan (IRP) is to minimize our long run total costs and produce the least cost to our customers consistent with the availability of an adequate and reliable supply of electric energy while maintaining system flexibility and considering environmental impacts. We intend for the plan to also improve customer service, offer additional customer options, and improve efficiencies of energy usage.

2. RELEVANT SUPPORTING DOCUMENTATION

a. See ATTACHMENTS

- 1 --- SUPPLY RESOURCES
- 2 --- DEMAND FORECAST
- 3 --- SUPPLY AND SALES FORECAST
- 4 --- ENERGY PRODUCED FROM ALL ENERGY RESOURCES
- 5--- PLANNED ELETRICAL TRANSMISSION INVESTMENTS

3. SUPPLY RESOURCES

LPC presently utilizes ten sources of supply, including nine generation stations and purchases from Duke Energy (See Attachment 1). More than 99% of the power LPC self-generates is renewable energy. LPC utilizes a firm wholesale PPA with Duke Energy to provide its generation needs beyond the amount it self-generates. LPC generates approximately one-quarter of its own load with renewable energy with the remainder purchased from Duke Energy (See Attachment 4). Duke Energy's rates to LPC are

1 presumptively just and reasonable, having been permitted by the FERC. We plan to
2 continue to use Duke Energy to provide a firm load-following supply for the foreseeable
3 future. However, LPC intends to investigate other sources to determine if the costs and
4 benefits, both short run and long run, meet the objectives of our IRP. The sources we
5 intend to investigate include, but are not limited to the following:

6 **GENERATION** --- Additional cost effective renewable energy generation resources;
7 cost effective natural gas generation resources.
8

9 **4. VARIOUS ENERGY AND DEMAND ALTERNATIVES, EFFICIENT ENERGY**
10 **CHOICES AND PROPER PRICING SIGNALS**

11 LPC has done and continues to do the following:

12 A. Designed its rates to economically encourage improved load factors and
13 to reduce monthly demands by:

14 1. Incorporating a demand penalty by use of a demand ratchet
15 in its residential rates. This encourages peak shaving.

16 2. Dividing its commercial and industrial rates into a first 200
17 hours use of billing demand rate and an over 200 hours use of
18 billing demand rate with the rates in the latter considerably less
19 expensive than the first 200 hours use block. This encourages peak
20 shaving.

21 3. Incorporating conservation requirements in its Residential -
22 All Electric and General Service - All Electric rates. This
23 encourages conservation.

24 4. Designing its Residential and Residential - All Electric
25 rates such that they are identical during the summer months, the
26 season of LPC's system peak. This encourages peak shaving and
27 conservation.

1 5. Designing its General Service Commercial and General
2 Service - All Electric rates such that they are identical during the
3 summer months, the season of LPC's system peak. This
4 encourages peak shaving and conservation.

5 6. Converting its Residential rate and Residential - All
6 -Electric rate (summer months) from a declining block rate to an
7 inverted rate. This encourages conservation.

8 7. Designing a Solar rider for its residential customers
9

10 **5. EVALUATING POTENTIAL OPTIONS**

11 LPC will employ unbiased analysis techniques for potential options included in its IRP.
12 LPC will evaluate each option by including all appropriate costs and benefits and will
13 provide a detailed explanation with supporting evidence for our choice.
14

15 **6. EVALUATING THE COST EFFECTIVENESS OF SUPPLY-SIDE AND**
16 **DEMAND SIDE OPTIONS**

17 LPC has adopted an interruptible service demand-side management program offered by
18 Duke Energy. Currently approximately one-fourth of LPC's industrial customers are
19 enrolled in the program. This program encourages peak shaving.
20

21 **7. MEASURE OF NET BENEFITS**

22 LPC will provide the net benefits resulting from the options chosen for use, keeping
23 within the objective stated in Section 1. Benefits are considered to be, but are not limited
24 to, cost savings, peak load shaving, conservation, load shifting, valley filling,
25 environmental concerns, improvement of customer service, offering of additional
26 customer options, improved efficiencies of energy usage, and improved outage times and
27 reliability, and economic development impact on the community.
28

1 **8. ENVIRONMENTAL COSTS**

2 LPC will consider environmental costs on a monetized basis where reasonable and
3 sufficient data is available in its planning process and evaluation of options. Those
4 environmental costs that cannot be monetized will be addressed on a qualitative basis
5 within the planning process and evaluation of options. The environmental costs referred
6 to here are those costs associated with demand or supply side options which impact the
7 customer directly or indirectly.

8
9 **9. DEMAND AND ENERGY FORECAST**

10 See Attachments 2 and 3
11

12 **10. EVALUATION AND REVIEW OF EXISTING DEMAND-SIDE OPTIONS**

13 See Section 4 Above
14

15 **11. FUTURE STUDIES**

16 LPC continues to evaluate potential renewable energy initiatives and other potential
17 supply-side opportunities. In particular, as the cost of solar generation equipment
18 continues to drop, potential opportunities to cost-effectively provide smaller utility-scale
19 solar power for our customers will continue to be studied.
20

21 **12. FLEXIBILITY AND QUICK RESPONSE**

22 LPC intends to remain flexible enough to react quickly to changes in a manner consistent
23 with minimizing costs while maintaining reliability.
24

25 **13. PLANNED ELECTRICAL TRANSMISSION INVESTMENTS**

26 LPC is committed to maintenance and improvement of the transmission system by making
27 investments in short and long term capital budgeted projects as seen in ATTACHMENT
28 5.

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14. THIRD PARTY POWER PURCHASES

LPC will investigate other purchase sources if the occasion arises and is willing to pursue any other purchase sources to determine if the costs and benefits, both short run and long run, provide our customers with the options consistent with our IRP objective.

15. NEW TECHNOLOGIES

LPC will continuously evaluate, pursuant to its IRP objective, new technology for both demand-side and supply-side options. In addition to advances in solar generation technology, Lockhart Power Company keeps up-to-date on advances in hydrokinetic and similar technologies that could one day be cost effectively deployed in existing water conveyances.

16. FUTURE SUPPLY-SIDE OPTIONS

LPC presently has no certain scheduled supply side options other than those described in Section 3. LPC is monitoring development of the solar generation market in South Carolina, including proposed legislative changes, and will respond to any changes in a manner that is cost effective and appropriate for its customers.

17. CAPTURING LOST OPPORTUNITY RESOURCES

LPC gives attention to capturing lost-opportunity resources which include cost-effective energy efficiency savings such as in new construction, renovation, and in routine replacement of existing equipment. In routine replacement of any and all equipment, LPC includes energy and efficiency savings as a component of evaluation.

18. DYNAMICS OF IRP PROCESS

LPC realizes that the IRP process is dynamic and that modifications may be necessary over time. As new issues arise, existing issues or components of the plan change in

1 significance and improved analysis techniques developed; LPC intends to file revisions to
2 its IRP with The Public Service Commission of South Carolina and request that the
3 Commission incorporate the revision into LPC's IRP or approve it as a separate
4 consideration.

Supply Resources

| Facility Name | Location | Nameplate Capacity | Rate Base? | Fuel Source |
|--|---------------|--------------------|------------|-------------------------|
| Lockhart Hydro | Lockhart, SC | 18 MW | Yes | Water (Non-Consumptive) |
| Lower Pacolet Hydro* | Pacolet, SC | 0.8 MW | Yes | Water (Non-Consumptive) |
| Pacolet Diesel | Pacolet, SC | 5.5 MW | Yes | Diesel |
| Union Diesel | Union, SC | 7.3 MW | Yes | Diesel |
| Wellford Renewable Energy Facility* | Wellford, SC | 1.6 MW | Yes | Landfill Gas |
| Upper Pacolet Hydro* | Pacolet, SC | 1.1 MW | Yes | Water (Non-Consumptive) |
| Lockhart Minimum Flow Hydro* | Lockhart, SC | 0.8 MW | Yes | Water (Non-Consumptive) |
| Lockhart Bio-Energy, LLC Union Renewable Energy Facility* | Union, SC | 3.2 MW | No | Landfill Gas |
| Buzzard Roost Hydro (As of 6-1-20) | Greenwood, SC | 15 MW | No | Water (Non-Consumptive) |
| Purchases from Duke Energy (as Firm Customers) | N/A | Load Following | N/A | N/A |

*Notes: Power generated from these facilities is currently sold off-system under contracts. Revenues from the facilities in rate base flow to Lockhart Power Company's customers.

LOCKHART POWER COMPANY

DOCKET NO. 2019-227-E & 2020-11-E
ORDER NO. 94-348 & 98-502

SUMMER DEMAND FORECAST

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| SYSTEM SUMMER PEAK | | | | | | | | | | | | | | | |
| DEMAND IN MW'S | 67.4 | 68.1 | 68.8 | 69.4 | 70.1 | 70.8 | 71.5 | 72.3 | 73.0 | 73.7 | 74.5 | 75.2 | 75.9 | 76.7 | 77.5 |
| SYSTEM PEAK DEMAND | | | | | | | | | | | | | | | |
| DEMAND SOURCES | | | | | | | | | | | | | | | |
| LOCKHART HYDRO GENERATION | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 |
| PACOLET DIESEL GENERATION | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| UNION DIESEL GENERATION | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 |
| PURCHASES FROM DUKE ENERGY | 37.6 | 38.3 | 39.0 | 39.6 | 40.3 | 41.0 | 41.7 | 42.5 | 43.2 | 43.9 | 44.7 | 45.4 | 46.1 | 46.9 | 47.7 |
| TOTAL DEMAND SOURCES | 67.4 | 68.1 | 68.8 | 69.4 | 70.1 | 70.8 | 71.5 | 72.3 | 73.0 | 73.7 | 74.5 | 75.2 | 75.9 | 76.7 | 77.5 |

WINTER DEMAND FORECAST

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| SYSTEM WINTER PEAK | | | | | | | | | | | | | | | |
| DEMAND IN MW'S | 62.6 | 63.2 | 63.9 | 64.5 | 65.1 | 65.8 | 66.5 | 67.1 | 67.8 | 68.5 | 69.1 | 69.8 | 70.5 | 71.2 | 72.0 |
| SYSTEM PEAK DEMAND | | | | | | | | | | | | | | | |
| DEMAND SOURCES | | | | | | | | | | | | | | | |
| LOCKHART HYDRO GENERATION | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 |
| PACOLET DIESEL GENERATION | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| UNION DIESEL GENERATION | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 |
| PURCHASES FROM DUKE ENERGY | 32.8 | 33.4 | 34.1 | 34.7 | 35.3 | 36.0 | 36.7 | 37.3 | 38.0 | 38.7 | 39.3 | 40.0 | 40.7 | 41.4 | 42.2 |
| TOTAL DEMAND SOURCES | 62.6 | 63.2 | 63.9 | 64.5 | 65.1 | 65.8 | 66.5 | 67.1 | 67.8 | 68.5 | 69.1 | 69.8 | 70.5 | 71.2 | 72.0 |

Note: LPC generation resources that provide off-system sales per long-term contracts are excluded.

LOCKHART POWER COMPANY

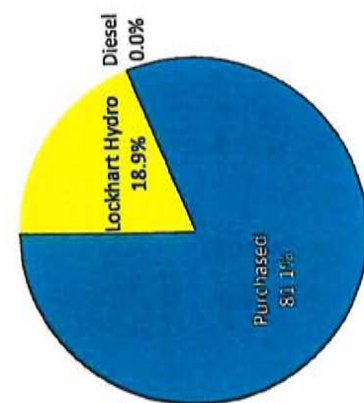
Docket NO. 2019-227-E & 2020-11-E
Order NO. 94-348 & 98-502

SUPPLY AND SALES FORECAST (MWH)

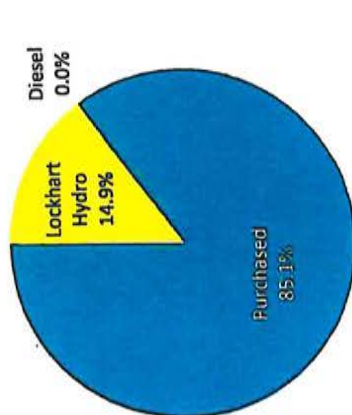
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| System Requirements | | | | | | | | | | | | | | | |
| Metered Sales | 339,277 | 342,670 | 345,096 | 349,557 | 353,053 | 356,584 | 360,149 | 363,751 | 367,388 | 371,062 | 374,773 | 378,521 | 382,306 | 386,129 | 389,990 |
| Company Use | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 | 852 |
| Losses | 19,165 | 19,357 | 19,550 | 19,746 | 19,943 | 20,143 | 20,344 | 20,547 | 20,753 | 20,960 | 21,170 | 21,382 | 21,596 | 21,812 | 22,030 |
| Required System Input | 359,294 | 362,878 | 366,489 | 370,155 | 373,848 | 377,578 | 381,345 | 385,150 | 388,983 | 392,875 | 396,795 | 400,754 | 404,753 | 408,792 | 412,872 |
| Supply Sources | | | | | | | | | | | | | | | |
| Lockhart Hydro Generation | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 | 76,121 |
| Pacolet Diesel Generation | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Union Diesel Generation | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Purchases from Duke | 283,118 | 286,702 | 290,323 | 293,979 | 297,672 | 301,402 | 305,169 | 308,974 | 312,817 | 316,699 | 320,619 | 324,578 | 328,577 | 332,616 | 336,696 |
| Total Supply | 359,294 | 362,878 | 366,489 | 370,155 | 373,848 | 377,578 | 381,345 | 385,150 | 388,983 | 392,875 | 396,795 | 400,754 | 404,753 | 408,792 | 412,872 |

Note: Under the current Duke Energy PPA, the Pacolet and Union Diesel Generation stations are only operated in emergency situations.

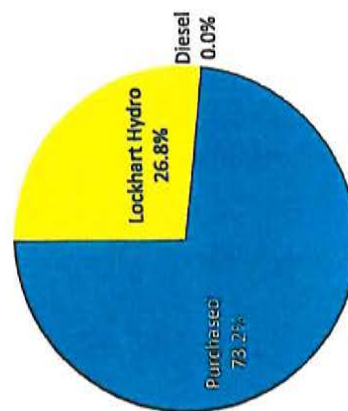
LOCKHART POWER COMPANY
ENERGY SOURCES IN PERCENT OF MWH'S INPUT



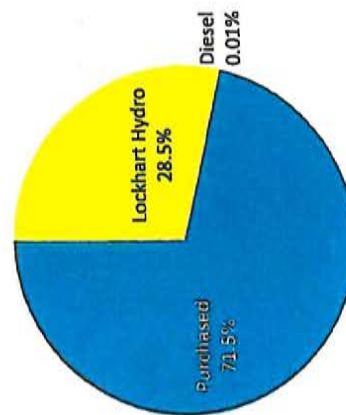
2016



2017



2018



2019

Note: Purchased Power obtained from Duke Energy

ATTACHMENT 5

Electrical Transmission Investments Planned

- Replace 34 kV Transmission Line Fault Indicator System
- Replace 34 kV Transmission Breaker at Duke–Lockhart Tie Station
- Replace 100 kV Transformer at Duke-Lockhart Tie Station